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AUTHOR Clement, Paul W.
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ABSTRACT

A system for describing the specific elements that constitute any psychological intervention is presented. The system includes 39 operations or controlling responses which may be administered by the psychologist, the client, or both together. Varying the administration of the operations can provide over 100 source/operation elements in the coding system which can be combined in thousands of unique associations in order to make distinctive treatment packages. Definitions and examples of the operations are provided. The 39 operations consist of 8 setting events, 11 cues and prods, 3 primary behaviors, and 17 consequences. The use of the coding system is illustrated and data on inter- and intra-rater reliability are provided. (Author)

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A System For Describing Therapeutic Interventions

Paul W. Clement

Graduate School of Psychology

Fuller Theological Seminary

447 N. El Molino Avenue

Pasadena, CA. 91101

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A SYSTEM FOR DESCRIBING THERAPEUTIC INTERVENTIONS

Paul W. Clement

Graduate School of Psychology

Fuller Theological Seminary

Psychology needs a system for clearly describing the specific elements that constitute a given therapeutic intervention. The typical therapeutic labels and definitions of independent variables often provide insufficient information for understanding exactly what a particular therapist or researcher has done. This lack of precision in therapeutic language poses a serious problem in determining trends of treatment effects across investigations, researchers, and locations.

I have taken a step toward developing the needed descriptive system. In its present stage of development, the system includes 39 operations that may be used to constitute any psychological treatment. These operations are "controlling responses" which constitute the building blocks of which interventions are made. Any one of these building blocks may be administered by the psychologist, the client, or both the psychologist and the client. The present system for coding therapeutic interventions developed out of attempts to define precisely what operations to teach to clients who are participating in self-regulation programs, but the system is quite appropriate for specifying the elements of psychologist-controlled treatments.

The 39 operations of the system fall into four broad categories: (a) setting events, (b) cues and prods, (c) primary behaviors, and (d) consequences and feedback. The system uses eight categories of Setting events which are interventions that affect the general state of the client, thereby changing response thresholds for cues, prods, or

reinforcers. Examples of setting events are presenting a deprivation schedule or applying aversive stimulation noncontingently.

The system includes 11 categories of cues and prods, such as asking the client to engage in a particular behavior or providing a social model. Primary behaviors are operations which can only be performed by the client. The system uses three categories of primary behaviors, such as the client rehearsing assertive behaviors. The remaining 17 operations are categories of consequences and feedback, such as systematically tracking a target behavior or contingently administering a social reinforcer.

General Conceptual Scheme

In Science and Human Behavior Skinner (1953/1965) distinguished between "controlled" and "controlling" responses. This basic distinction is one of the starting points for the present system. Figure 1 presents a grid for planning reinforcement contingencies and for identifying whether a particular instance of treatment involves self-regulation or regulation by others. The block on the extreme right represents the controlled response, more typically referred to as the "target behavior" or "clinical problem to be solved." Although the target behavior could be a respondent, Figure 1 depicts the situation when the target behavior is an operant.

Theoretically, for any operant there is at least one cue and at least one consequence associated with the occurrence of the behavior.

The immediate cue and consequence for a given action are assumed to have the greatest controlling power over that action. To a great extent the operations described later in this paper involve the immediate cues and consequences for the target behavior; however, some significant treatment operations do occur some distance in time from the target behavior. All known operations which

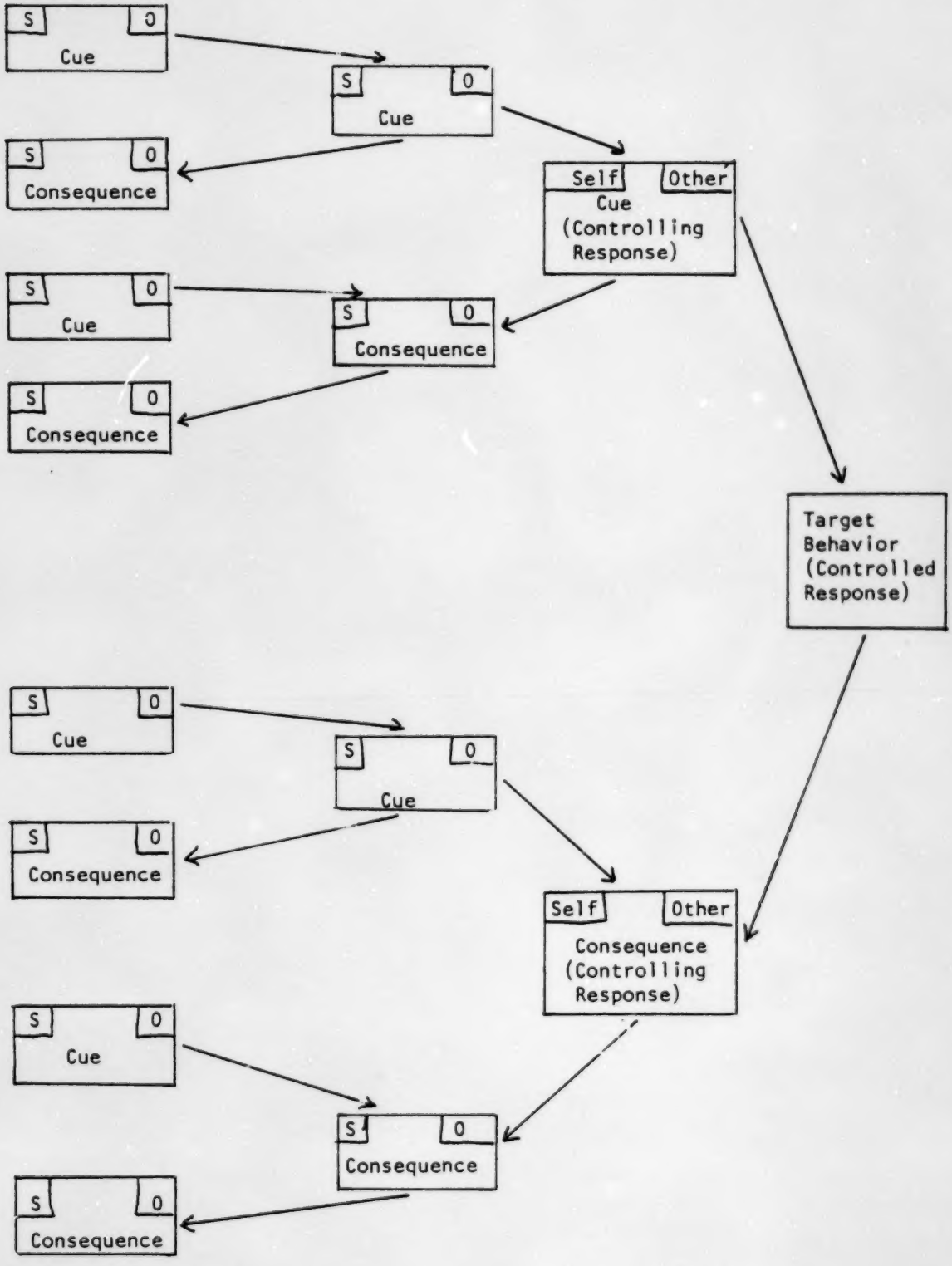

Figure 1. Grid for planning reinforcement contingencies in self-regulation.

may affect the occurrence of the target behavior should be identified and coded. In the interest of clarity, however, Figure 1 only deals with cues and consequences. Understanding the relationship between cues, consequences, and target behaviors should facilitate use of the coding system to be described later in this paper.

Since the cue and consequence for the target behavior often constitute two additional actions themselves, the cuing action would have its own cue and consequence as would the consequating action. Hence, an adequate analysis of what occurs in a given treatment situation requires identifying a second level of cues and consequences which constitute additional controlling responses in the chain. Once these are identified, each of them in turn has its own cue and consequence, which need to be identified. Each cuing and consequating action may be performed by another person or by the target subject himself. Figure 1 suggests an infinite expansion of cues, consequences, and persons participating in the controlling responses. Identifying the operations which are most clearly related to variability in the target behavior is one of the most basic problems facing both the clinician and the reseracher. To the extent that these operations can be identified, the present coding system presents a method for concisely listing them and indicating who, the client or another person, carries out each controlling response.

Because behavior occurs in a continuous flow, defining the temporal boundaries of a given behavior is often difficult and relatively arbitrary. Distinguishing between target behaviors and controlling responses can also become confusing. Such confusion can be minimized by keeping in mind that the target behavior is the final link in the behavioral chain according to the perspective being used at the moment. Being clear about what is the target behavior in a given moment is essential for using the following system.

General Instructions

Decide the Target Behavior

The target behavior is the reference point for making decisions about what is and what is not a controlling response in a given instance. Since behavior flows continuously and relatively simple social interactions consist of complex sets of behavior, raters are easily confused about what is the target behavior in a given instance. Some common target behaviors are as follows:

aggressive behavior
allergic responses
avoidance responses
anxiety
assertive behavior
attending
blood pressure
cardiac rate
cheating
cigarette smoking
compulsive behavior
daydreaming
depression
dreaming
drinking alcohol
drug consumption
eating
encopresis
enuresis
exercise
exhibitionistic behavior
fainting
fear responses
firesetting
gambling
hair pulling
hallucinations
headaches
headbanging
homosexual behavior
hyperactive behavior
insomnia
marital behavior
mutism
nailbiting
obsessive behavior
on-task behavior
pain responses
phobic behavior
problem-solving behavior

public speaking fear
reading
relaxation responses
rumination
sadistic behavior
sexual behavior
stealing behavior
stuttering
tantrum behavior
test anxiety
torticollis
trichotillomania
vomiting
voyeurism
writing

Identify the Controlling Responses

Controlling responses are those operations which change the probability of a target behavior occurring. What may be defined as a target behavior in one situation (for example, drug consumption) may be defined as a controlling response (for example, a setting factor) in another circumstance. Controlling responses are what the therapeutic agent does to change the probability (frequency, rate, intensity, etc.) of the target behavior.

Operations Must Be Explicit

Only record operations (controlling responses) which are explicitly described. Do not try to guess what another researcher has done. If you cannot determine from the investigator's written description whether a particular controlling response was used, do not record the controlling response. Where you have unanswered questions about what operations constitute intervention, directly contact the investigator and ask.

Numeric Code

The numbers to the left of each of the 39 operations (controlling responses) listed in the following section should be used to form a numerically coded description of each intervention. The coded intervention should begin with the lowest numbered operation listed first, the second lowest numbered operation listed second, etc. If a particular operation was not used in the intervention

being coded, do not list that operation's number in the intervention's code.

Awareness

For an operation to be coded, there should be clear evidence that the target subject will be or was aware of the operation. If the procedural description makes clear that the target subject will not be or was not aware of the operation, then it should not be scored. For example, if baseline data are gathered on a child who is blind to the fact that he is being observed, and the observer keeps a graphic record of the daily behavior scores, operation "-25-" would not be used. Functionally there is no intervention at that point; therefore, coding an intervention operation would not be appropriate.

Person(s) Making Controlling Response

When it is determined that a particular operation has been included as part of an intervention, the rater should also decide who carried out that controlling response. When the operation is self-administered, the corresponding number from the numeric code is not underlined. When a person other than the target person performs the controlling response, the corresponding number is underlined. When both the target person and another individual jointly perform the operation, the corresponding number is enclosed in parentheses. Hyphens separate adjacent numbers in order to facilitate discrimination between one- and two-digit numbers.

The Coding System

Setting Events

Setting events are operations which change the general state of the person. They cut across behaviors. They change thresholds for various stimuli (both antecedent and consequent) and/or they change one or more response parameters of operants and/or respondents. The most commonly used setting events are as follows:

1. Administration of a deprivation schedule.

Examples:

a. The therapist places a 10-year-old, shy, withdrawn boy in a room by himself for one hour before each weekly play group therapy session. The stated purpose is to deprive the child of social contacts just before the therapy session in order to increase the boy's responsiveness to social reinforcers from his peers.

This operation would be scored "1-" in the coding system.

b. An adult male complains that he does not usually enjoy sexual intercourse with his wife; however, he also stated that he masturbates about four times a week. His therapist suggested that he stop masturbating and reserve sexual intercourse with his wife as the sole source of direct sexual stimulation. The man understands the reason for the recommendation and stops masturbating (i.e., deprives himself of that source of sexual stimulation and release). Although the therapist had suggested the idea, it was the client himself who carried out the operation.

This operation would be scored "1-".

c. A college student is interested in the relationship between sleep and his own anxiety level. He gets two friends to agree to take turns helping keep him awake for 36 hours. They play cards, drink coffee, exercise, jog, sing, and engage in other activities designed to keep him awake (i.e., deprive him of sleep). The student and his friends jointly engage in these activities for keeping him away from sleep.

This operation would be scored "(1)-".

N.B.: The key issue is not who suggests the deprivation schedule; the key issue is who carries out the actions or operations that define the deprivation schedule.

2. Administration of a satiation schedule.

Examples:

a. A mother discovers her five-year-old smoking a cigarette behind the garage. She brings him into the house, sits him in the family room, and requires him to smoke ten cigarettes in a row. Although at first glance it may appear as though the mother is the sole initiator of this intervention, the intervention involves the direct participation of the child as well as the mother.

This operation would be scored "-(2)-".

b. A father has repeatedly told his 16-year-old son to keep the volume on his stereo turned lower. The son does not comply. The father changes his approach and starts turning the volume on the stereo substantially higher.

This operation would be scored "-2-".

c. A 12-year-old girl complains of being over-weight and expresses a desire to reduce. She is a compulsive candy eater. She decides that one of the first steps in her weight reduction program should be to weaken the attractiveness of candy; therefore, she buys three pounds of chocolate candy and eats all of it in one sitting. By the last bite of candy, she is quite sick of chocolate.

This operation would be scored "-2-".

3. Administration of drugs.

Examples:

a. Each morning a mother gives her eight-year-old, hyperactive son 50 mg of Ritalin before he leaves for school. He often protests about taking the medication, so his mother places the pill on his tongue, gives him a drink of water, holds his nose until he swallows, and then inspects his mouth to be sure the pill was swallowed.

This operation would be scored "-3-".

b. A nine-year-old boy has expressed concerns about his difficulties in paying attention at school. His pediatrician has explained to the child and his parents the possible benefits of Ritalin. The boy and his mother agree to share the responsibility for the boy's taking the medication. Each morning he asks her to give him one of his pills. He takes the pill and the two of them record the dosage and time on a chart which is taped to the refrigerator.

This operation would be scored "-(3)-".

c. A 15-year-old girl obtains "diet pills" from her physician. She takes these faithfully at the times recommended to her by the doctor.

This operation would be scored "-3-".

4. Application of physical restraints.

Examples:

a. A retarded child frequently engages in self-injurious behavior such as eye-gouging. The attendants at the state hospital often tie the child's hands to his bed with leather straps so that he cannot engage in eye-gouging.

This operation would be scored "-4-".

b. An 11-year-old boy has discovered that once his angry feelings reach a certain level, he is very likely to do something which he will later regret. His sister has just done something about which he is very angry. He asks his brother to lock him in the woodshed for 20 minutes to give him time to cool off. The boy and his brother walk to the woodshed, the boy enters, and his brother locks the door.

This operation would be scored "-(4)-".

c. A 19-year-old boy has just returned home from a fight with his girlfriend. She told him that their relationship is over. He is very depressed and begins to have suicidal thoughts. These thoughts scare him, so he looks for his little brother's handcuffs. He opens them with the key, leaves the key in the hallway, enters his bedroom, and handcuffs himself to the bed.

This operation would be scored "-4-".

5. Providing choices or alternative goals.

Examples:

a. A therapist asks a depressed client to choose one of the following as the homework activity for the following week: (a) have lunch with a friend, (b) spend at least 90 minutes talking to one or more friends on the telephone, or (c) attend the small group at church.

This operation would be scored "-5-".

N.B.: This operation covers providing choices, not selecting from among choices. Since the therapist provided the choices (alternatives), the code number should be underlined.

b. As a therapeutic homework assignment a client lists ten goals to pursue during the next three months. He understands that at his next therapy session he will select the one goal out of these ten which he wants to work on first.

This operation of generation goals would be scored "-5-".

c. A 48-year-old man is in therapy. The therapist invites the man's wife to join her husband in the next therapy session. In the conjoint session the man and his wife jointly create a list of fun activities

in which they might engage in the future.

This operation of generating the list of fun activities would be scored "-(5)-".

6. Application of pleasant stimulation. When positive reinforcers are delivered without a contingent relationship to the target behavior, their delivery should be identified as a setting event rather than as a consequence.

Examples:

a. A researcher hires a boy to self-observe on-task behavior, but rate of pay is unrelated to the frequency of on-task behavior. Rate of pay is determined by the amount of time the child self-observes. The target behavior, however, is being on-task.

The operation of paying the child to self-observe would be scored "-6-" with reference to the target behavior.

b. A seven-year-old boy has difficulty falling asleep at night. His mother gives him a back massage with an electric vibrator for ten minutes each night after he climbs into bed. The time he takes to fall asleep is the target.

The operation of giving the massage would be scored "-6-".

c. A 17-year-old girl believes that she can concentrate on her studies better when she plays soft music. She enters her room, turns on her stereo to a low volume, and begins to study.

The operation of turning on her stereo would be scored "-6-".

d. A constricted, inhibited father has discovered that when he plays with his children in the park, he becomes more relaxed. His objective is to become more relaxed. He takes his kids to the park and plays with them for two hours.

The operation of playing with his kids in the park would be scored "-(6)-".

N.B.: The preceding operation must be listed in parentheses, since the father could not carry out the operation of playing with his kids without their active participation.

7. Application of aversive stimulation. When negative reinforcers are delivered without a contingent relationship to the target behavior, their delivery should be identified as a setting event rather than as a consequence.

Examples:

a. A 20-year-old college student reports having a foot fetish. He becomes sexually aroused at the sight of female feet or shoes. Based on his reading an account of escape training, he delivers an electric shock to himself. After he starts the shock, he begins viewing pictures of women's shoes and feet. When he can stand the shock no longer, he stops looking at the pictures of women's feet, looks at pictures of the upper bodies of attractive women, and turns off the shock.

The operation of initially turning on the shock before viewing any pictures would be scored "-7-". In contrast, the act of turning the shock off contingent on his ceasing to look at feet and starting to look at upper bodies would be scored "-37-".

b. An alcoholic man frequently comes home drunk and physically abuses various members of the family. When these episodes occur on a night before school, his son, Georgie, is non-attentive and non-compliant at school for the next day or two.

The operations of delivering non-contingent verbal and physical abuse would be scored "-7-". The target behaviors which serve as a reference point are Georgie's non-attentive and non-compliant behaviors at school.

c. The 20-year-old described in 7.a. above consults a therapist who assists the client in carrying out the escape training. The therapist and the client take turns turning the shock on and off.

The operation of initially turning on the shock before the client views any pictures would be scored "-(7)-".

8. Providing employment; providing a "rooting section;" providing a relationship.

Examples:

a. A researcher hires an eight-year-old boy to work on a research project. The researcher and the boy meet for approximately three times a week, 20 minutes per meeting.

The operation of hiring the child and meeting with him would be scored "-8-".

b. A 35-year-old, single, male enters "traditional" psychotherapy. The therapist intends to provide a therapeutic relationship to the client in order to enhance the man's chances for personal growth. Although the therapist does his best neither to approve nor disapprove of his client as a person, he does let the client know that he is interested in how well the client is doing.

The operation of providing a therapeutic relationship and communicating an on-going interest in the client would be scored "-8-".

N.B.: Although theoretically an individual could provide himself/herself with a relationship or rooting section, clearly defining the operations that would be involved has not been done in the present system. This failure to define self-administered and jointly administered operation #8 in empirical terms means that "-8-" and "-(8)-" will not be used.

Cues, Discriminative Stimuli, and Prods

Cues, discriminative stimuli, and prods are categories of discrete stimuli that may set the occasion for an operant or elicit a respondent. Their presentation to a person constitutes the second broad category of controlling responses. Whereas setting events alter many behaviors at one time, the present

category of events has a much narrower impact. A given cue, discriminative stimulus, or prod tends to alter only one or a few behaviors.

9. Choosing a target behavior. Before a behavior can be treated, someone must select the behavior to be treated.

Examples:

a. Bob and Janet come to their first conjoint marital therapy session. They discuss their complaints about their relationship. In response to a question from the therapist, they jointly state that what they most want to see changed is for each of them to say more consistently what he/she is thinking and feeling.

The operation of their jointly selecting assertive responses as the the target behavior would be scored "-(9)-".

b. Another couple, Ted and Bonnie, present a similar set of complaints to their therapist. The therapist tells them that he believes they should work on becoming more assertive.

The operation of the therapist choosing assertiveness as the target would be rated "-9-".

c. A fifth-grader is talking to his school counselor about various problems the child is having in the classroom. The counselor invites the student to select one problem area to work on. The boy decides to work on increasing the amount of time that he works on his assignments and attends to class activities assigned by the teacher.

The operation of the boy's selecting on-task behavior as the target would be rated "-9-".

10. Defining a target behavior. In order to increase inter-judge agreement, each target behavior needs more than just being named; it needs a clear definition stated in empirical terms.

Examples:

a. After selecting "to say more consistently what we are thinking and feeling," Bob and Janet (mentioned in 9.a. above) carefully defined what behaviors would be included in that response class. They also gave a few examples of behaviors which would not be covered by their definition.

Their attempts to define their target behavior would be rated as "-(10)-".

b. After selecting "assertive responses" as the target behavior for Ted and Bonnie, the therapist defined for them what he meant by "assertive responses."

The therapist's defining the target behavior would be rated as "-10-".

c. The fifth-grader mentioned in 9.c. above wrote a list of all behaviors he considered to fall in the response class "on-task behavior."

His defining the target behavior for himself would be rated "-10-".

11. Presenting an immediate cue, discriminative stimulus, or prod. "Immediate" means just before the target behavior. Normally the time lag between the cue or prod and the action or response will be not more than a few seconds. An event which appears to be a cue or prod, but which is followed by an extended lag before the target behavior occurs, should be scored as one of the other operations (i.e., #9-10, 12-19).

Examples:

a. A third-grade boy is participating in a clinical research program on self-reinforcement. He keeps an interval timer in his shirt pocket and keeps the timer running from 9:00-10:30 each morning when he is in his classroom. The timer signals the end of each interval by delivering a tone to the child's ear via a miniature speaker. At the tone the child self-observes and self-reinforces, if he is in his seat when the tone sounds.

The operation of cuing himself via the interval timer to self-observe would not be scored under operation #11, because the described cue is for a controlling response (self-observation and self-reinforcement) rather than for the controlled response or target behavior (sitting in seat).

b. Later in the same study mentioned just above the investigator changes the procedures. The child agrees to use the interval timer as a reminder to stay on task. When the tone sounds, he will continue doing his school work if he is already on task. If he is off task just before the tone, he will start doing his assigned work right after the tone sounds.

The operation of cuing himself to be on task would be rated as "-11-".

N.B.: Raters may be tempted to <u>assume</u> that the type of conditions described in example 11.a. will provide cues for the target behavior (in seat) and, therefore, should also be rated as "-11-". Such assumptions may be valid, but they must not be reflected in the coded operations. Only operations and their relationship to identified target behaviors (in contrast to controlling responses) should appear in the coded description of the intervention package. Also, by definition, a "cue" precedes the target behavior, but in example 11.a. the tone followed the target behavior (in seat) but preceded the controlling response (self-observe and self-reinforce).

c. At the beginning of a relaxation training session the therapist asks the client to close her eyes. The client immediately complies.

The operation of asking the client to close her eyes would be rated "-<u>11</u>-".

d. In an aversive conditioning treatment a rest period of a few minutes follows each electric shock. The client tells the therapist when he is ready to view the next slide of the arousal pictures and then the

therapist projects the slide on the screen in front of the client.

The operation of deciding when to present the slide and turning on the projector would be rated "-(11)-" because both the client and therapist participated in carrying out the controlling response.

12. Setting a goal for a target behavior.

Examples:

a. A teacher and her student discuss how the student's behavior could improve in the classroom. They finally agree that during the next four weeks the student will increase his on-task behavior by 50% in comparison to the preceding month.

The operation of mutually determining the goal would be rated "-(12)-".

b. After completing his intake evaluation the therapist suggests to his 38-year-old depressed client that she will have to reduce her self-depreciating thoughts and statements. He suggests that she work to reduce such behaviors by 25% during the next week.

The operation of setting this goal would be rated "-12-".

c. A successful business man has read about stress management. He arranges an interview with a psychologist who specializes in stress management. He tells her that he would like to lower his systolic blood pressure by 20 or more points and his diastolic pressure by 10 or more points. Then he asks her if she can help him reach that goal.

The operation of setting the objective for reducing his blood pressure would be rated "-12-".

13. Setting performance standards for consequating the target behavior. This operation includes specifying the contingencies for a particular intervention.

Examples:

a. A father tells his nine-year-old son that he will pay the boy one cent for every two math problems completed during each 30-minute homework

session after dinner.

The operation of the father's setting up this contingency would be rated "-13-".

b. The son tells his father that not only does he think doing more problems would be helpful, he also believes that improving the percentage done correctly would be a good idea. He said that he would like to require himself to get at least 90% of the problems correct in order to watch TV that night.

This self-imposed contingency would be rated "-13-".

c. A mother and daughter agree that they would have a happier home, if they yelled less at each other. The mother said that she would like to work on herself to lower her frequency of yelling. They discussed what positive consequences the mother might earn for talking instead of yelling. They held a mini brain-storming session and produced several ideas. After much discussion, they agreed to go out for lunch after every seven days in which the mother had not yelled.

The operation of jointly determining the reinforcement contingency for the mother would be rated "-(13)-".

14. Writing a performance contract.

Examples:

a. The father in example 13.a. wrote out what he had told his son. He signed the written summary and asked his son to do the same.

The father's writing out the agreement would be rated "-14-".

b. The son in example 13.b. wrote out what he had told his father. He signed the written statement and asked his father to sign as a "witness."

The boy's writing out his self-imposed agreement would be rated "-14-".

c. The mother and daughter in example 13.c. wrote out their agreement and both signed.

Their writing out their agreement would be rated "-(14)-".

15. Choosing a primary or back-up positive reinforcer. Operation #15 is scored when the reinforcer is selected before the treatment program is initiated. When this operation occurs after the occurrence of the target behavior or after a secondary reinforcer has been used for a while in a treatment program, operation #28 should be used.

Examples:

a. In setting up a token reinforcement program with a student, the teacher showed the student a reinforcer menu which included 20 objects and activities for which the student could work. The child had to make his selection from the options the teacher had listed in the reinforcer menu. He chose a model airplane. The teacher set the price of the model at 200 tokens.

The selection of the back-up reinforcer (the model) would be scored "-(15)-" since both the student and the teacher directly participated in determining what it would be.

b. Another teacher established a token reinforcement program for keeping classroom noise below a designated level. She told the class that for each 15 minutes that they stayed below the stated noise level, the whole class would earn one point. Each point could be traded for one minute of extra arts and crafts time on Friday afternoons.

The selection of arts and crafts as the back-up reinforcer for the class would be rated "-15-".

c. During a family counseling session in which a token reinforcement program was being set up for the home, the parents invited their seven-year-old daughter to say what she would like as a back-up reinforcer. She

selected having her father take her ice skating on Saturday mornings.

Her selecting ice skating would be rated "-15-".

16. Choosing a primary or back-up negative reinforcer.

Examples:

a. An alcoholic adult asked his therapist to use electric shock in his treatment program.

The client's selection of electric shock would be rated "-16-".

b. A pediatric psychologist selected pure lemon juice to use in a conditioning treatment program for a ruminating infant.

The therapist's selection of the lemon juice would be rated "-16-".

c. A therapist and his adult male client have decided to try aversion relief therapy in treating the man's urinary retention. They look through a contemporary textbook on aversive therapies and discuss the advantages and disadvantages of each type of aversive stimulus. They jointly decide that having the client place his left hand in ice water would be the best source of aversive stimulation.

Their selection would be rated "-(16)-".

17. Choosing a secondary, social, or token positive reinforcer. Score operation #17 when the event occurs before the target behavior gets reinforced or is tracked for intervention. Score operation #29 when the event follows the target behavior (cf., operations #15 and 28).

Examples:

a. Joey has seen other students in his class use wrist counters. When the school psychologist asked Joey how he would like to give himself points in his new self-reinforcement program, Joey said that he would like to record points on a wrist counter.

The operation of choosing points on a wrist counter as his "tokens" would be rated "-17-".

b. Ralph and Jake are both about to begin a self-administered treatment program. Both of them are to self-administer tokens. They discussed the possibilities and decided to use the same type of tokens---punching holes in 3 X 5 cards using paper punches with distinctive patterns.

The operation of their choosing this type of token system would be rated "-(17)-".

c. A kindergarten teacher decided to use a large points counter to reinforce her whole class for intervals of cooperative behavior. The points counter would be activated by a garage door opener.

Her selection of the points counter as a "token dispenser" would be rated "-17-".

18. Choosing a secondary, social, or token negative reinforcer.

Examples:

a. In a parent training workshop the leader tells a mother to say "No!" sharply as her toddler reaches for breakable objects in the house.

The leader's selecting "No" as the negative social reinforcer would be rated "-18-".

b. Ted and Carol are a young married couple. Carol has complained during counseling sessions that Ted calls her names and swears at her when he is mad. They discuss alternative ways that he might let her know that he is upset. They agreed that if he simply said, "I don't like it when you _____.", they would get along better.

Their selecting "I don't like it when you _____." would be rated "-(18)-".

c. A college student is setting up a weight reduction program for himself. He decides to include an arrangement in which on any day that he consumes more than 2,000 calories, he will seek out a peer whom he does not like and confess to that peer his failure to stick to his own

program.

His selection of this self-imposed negative social reinforcer would be rated "-18-".

18. Providing a model. The modeling may consist of live demonstrations, filmed or videotaped demonstrations, written instructions or descriptions of a response pattern, or orally presented instructions or descriptions of a response pattern.

Examples:

a. A 12-year-old autistic boy was frequently the butt of social attacks from his peers. His strange posture and gait seemed to be the major trigger for the other students' troubling behavior. The boy's therapist agreed to videotape the boy while the boy was walking. The sole modeling material would be the boy himself presented on the videotape.

Although the therapist did the filming, the actual modeling stimuli came from the boy himself; therefore, the operation of presenting these videotapes would be rated "-19-". The therapist would have had to appear in the modeling tapes or to have served as a model for walking part of the time in order to rate the operation as "-(19)-". Such was not the case.

b. A clinical researcher wrote a detailed description of how to carry out all of the operations which he had decided should constitute a self-reinforcement procedure. He gave these instructions to each of his subjects who would be working to improve their sustained attention in the classroom.

Providing the written instructions would not be rated at all, since the instructions were for a set of controlling responses. They were not for the target behavior of sustained attention.

c. Another clinical researcher was interested in evaluating the effects of instructional control of sustained attention. He modeled the following set of instructions for the subjects in his study: "When the teacher is talking, I should stop whatever I am doing and look directly at her face. I should keep looking at her until she has finished talking. When she does stop, I should ask myself if I have understood her instructions. If I think that I have understood, I will begin carrying out her instructions. If I do not understand, I will raise my hand. When she calls on me, I will tell her what I don't understand and ask for clarification."

This verbal modeling sequence from the researcher would be rated "-19-". In contrast to the modeling example presented in 19.b., the present example is of modeling directed at the target behavior.

d. In the second stage of the treatment program for the 12-year-old autistic boy mentioned above in example 19.a., the therapist added two new elements to simply watching the videotapes of the boy. First, he provided a commentary on the scenes they observed together on the TV monitor, pointing out when the boy was posturing or walking normally and when he was not. Secondly, the therapist himself did some live modeling, first imitating the strange movements of the boy and then demonstrating an appropriate style.

This combined modeling operation would be rated "-(19)-".

Primary Behaviors

Primary behaviors are the third broad category of controlling responses. They have a fundamental difference from all other controlling responses in that only the target person can implement these operations. In his discussion of "doing something else" Skinner (1953/1965) recognized that such self-controlling responses exist. He stated, "This is close to the control exercised by others

when they generate incompatible behavior. But where another person can do this only by arranging external variables, the individual appears to generate the behavior, so to speak, simply by executing it" (p. 239). This ability of the target person to execute the target behavior or not to execute it permits that person to use a larger number of treatment operations on himself than another person could apply to him. These unique operations of self-control are as follows:

20. Engaging in a desired target behavior.

Examples:

a. Donna is a 38-year-old homemaker who is working on becoming more assertive. She has decided to focus this week on saying what she feels to her husband every time that she has a noticeable feeling.

Practicing "feeling talk" would be rated "-20-".

b. Ralph is planning to use self-administered verbal instructions to improve his classroom behavior. He practices giving himself these verbal instructions for 10 minutes every night as he is getting ready for bed.

Practicing the verbal instructions would not be rated at all, since the verbal instructions are controlling responses, not a target behavior. Operation #20 should only be used when the target behavior itself is being emitted. In general, practicing controlling responses should not be scored under primary behavior #20.

21. Engaging in a response which competes with an undesired target behavior.

Example:

a, A 15-year-old girl has been diagnosed as having Gilles de la Tourette's syndrome. Among her various tics is the classical "barking" sound. She has discovered that if she is whistling, singing, or humming

a familiar tune, the barking tic won't occur; therefore, whenever she feels herself approaching those feelings which precede her tics, she starts whistling, singing, or humming.

Engaging in these competing behaviors would be rated "-21-".

22. Withholding or suppressing a target behavior.

Example:

a. Janet is a 34-year-old mother of two school-age boys. She has decided that yelling at them is not good for anyone and she wants to reduce her yelling. Although she does not practice any particular response which is incompatible with yelling, she focuses on doing anything other than yelling during those circumstances where yelling has usually occurred in the past.

Her deliberate withholding of yelling would be rated "-22-".

Such use of primary behaviors in self-administered treatment programs is particularly compatible with Guthrie's analysis of associative learning and its practical applications (Guthrie, 1938/1962, p. 75). Wright (1980) has more recently underlined the power and efficiency of simply getting a client to practice desired behaviors. Although the concept of primary behaviors has been underutilized in behavioral theorizing and writing, the final broad category of treatment operations has been the central focus of a large share of the literature.

Consequences for, Changes in the Environment Produced by, Tracking of, and Feedback from the Target Behavior

Consequences for, changes in the environment produced by, tracking of, and feedback from the target behavior constitute the final set of treatment operations. The detailed list is as follows:

23. Observing a target behavior; providing feedback; observing behavioral byproducts.

Examples:

a. A young woman who suffers from frequent headaches is undergoing muscle relaxation training via electromyographic feedback. She has a portable EMG which she uses each evening at home to receive feedback on the tension level of her frontalis muscles.

This operation would be rated "-23-".

N.B.: The use of external devices does not determine whether an operation should be rated as self-administered, administered by another person, or jointly administered. In example 23.a. the client used the EMG. She determined exactly when and how to use it; therefore, the code should indicate self-administration.

b. Before the young woman of example 23.a. began using the EMG at home, her therapist conducted training sessions in his office. During these sessions both the client and the therapist listened to the auditory feedback provided by the EMG.

This arrangement would be rated as operation "-(23)-".

c. In preparation for developing a behavior rating code for Harry's classroom behavior, a clinician's assistant observed him for three days in order to form general impressions of what behaviors he did and did not emit. Harry knew that the observer was present to evaluate him.

These observations of his classroom behavior would be rated "-23-".

24. Recording a target behavior; recording behavioral byproducts.

Examples:

a. At the end of each math class Georgie and the teacher's aide score his work sheet and enter the number of problems he completed and the percentage done correctly into a small record book which Georgie keeps in his desk.

The operation of recording his scores would be rated "-(24)-".

b. Tommy is carrying out a self-observation program in his classroom. The target behavior is"In Seat." When his interval timer signals him, he makes a quick observation of whether he is in his seat. If he is in his seat, he records the event by depressing the button on his wrist counter. At the end of the day he writes down his total score on a sheet of paper.

This operation would be scored "-24-".

c. In the second phase of developing a behavior observation form for Harry (see example 23.c.), the clinician's assistant uses an interval sampling procedure and records all of the behaviors that may receive some more specific intervention at a later time. These records are shared with Harry on a daily basis.

The independent recording of Harry's behavior would be rated "-24-".

N.B.: Although operation #23 may occur without #24, operation #24 normally would not be scored in the absence of #23. These two operations are not mutually exclusive. Whenever a person uses #24 to code an intervention, the rater should double check to make sure that one form of #23 was also recorded.

25. Graphing a target behavior.

Examples:

a. At the end of each week Georgie and the teacher's aide make a graphic record of his daily scores (see example 24.a.).

This operation would be scored "-(25)-".

b. At the end of each week Tommy makes a graphic record of his daily scores (see example 24.b.).

This operation would be rated "-25-".

c. The clinician's assistant makes a graphic record of the behaviors she observes and shows the graphs to Harry (see example 24.c.) at the end of each week.

This operation would be rated "-25-".

26. Comparing performance with a goal, objective, or criterion.

Examples:

a. The therapist reviewed his client's record of amount of time spent studying for each of the client's college courses. The therapist compared the amounts of actual studying against the client's objectives which were recorded in the Goal Attainment Follow-up Guide in the client's folder. The therapist told the client that the client appeared to have reached 80% of his expected level of studying success.

This example would be rated "-26-". Although the client was present when the comparisons were being made, the description does not cover any specific controlling responses which were being carried out by the client; therefore, this example should not be scored "-(26)-".

b. A psychologist was writing a book. He decided that he would like to complete 18 manuscript pages per day. At the end of each work day, he counted the number of pages that he had completed and compared that number with his stated objective.

This example would be scored "-26-".

c. A couple had been in conjoint marital therapy for five months. At the onset of therapy they had formalized their objectives in a Goal Attainment Follow-up Guide. Now they were about ready to terminate; therefore, they and their therapist compared their present level of functioning with the goals expressed in the Guide. The Guide contained individual goals for both the husband and wife.

This example would be scored "-(26)-".

27. Comparing performance with the standards for consequating the target behavior. Although this operation has some similarities to the preceding one, the preceding operation does not involve an explicit consequence beyond the

comparison process. The present operation does require an explicitly defined consequence along with specification of the schedule(s) of reinforcement or punishment being used.

Examples:

a. Bert and Karen have been in conjoint marital therapy. As part of their therapy they developed a performance contract. One of Karen's objectives was to modify her eating behavior and to lose weight. Bert takes Karen on a "date" each week that she loses one or more pounds in comparison to the preceding week. The weigh-in occurs each Friday when Bert returns home from work. Karen weighs herself as Bert watches.

The weigh-in process would be rated "-(27)-".

b. Kent is a graduate student. He is studying for his doctoral qualifying examinations. For every 15 minutes he studies continuously for these exams, he gives himself one point. His self-administered points pay for access to recreational activities such as tennis. One point purchases two minutes of recreation. He uses a kitchen timer to signal the end of intervals. If he stops studying for more than 30 seconds within an interval, he does not give himself a point.

The comparison process would be rated "-27-".

c. Bob is an attorney. His wife has complained that he does not listen to her and, if he happens to listen, he does not understand. Their therapist has been giving Bob "empathy training." During the marital counseling sessions the therapist praises Bob whenever Bob's responses to his wife reach "5" or higher on a nine-point empathy scale (Truax & Carkhuff, 1967, pp. 47-56).

28. Choosing a primary or back-up positive reinforcer. This is the same operation described under #15 except for its timing via-a-vis the target behavior. Operation #28 should be used when the selection of the primary or

back-up reinforcer occurs after the treatment program has been in operation for a while. Operation #28 would normally be scored only when a token reinforcement system is in operation.

"Choosing" should be distinguished from "administering." The person who says what the reinforcer will be is not necessarily the person who will actually provide the reinforcer.

No examples beyond those given for operation #15 will be given here.

29. Choosing a secondary, social, or token positive reinforcer. This is the same operation described under #17 except for its timing vis-a-vis the target behavior. Operation #29 should be used when the selection of the secondary, social, or token positive reinforcer occurs after the treatment program has been in operation for a while. Secondary and token reinforcers are usually chosen before an intervention is begun, i.e., they are usually rated as operation #17. Social reinforcers, however, are often chosen in the moment, during the course of treatment, and just after the target behavior occurs, i.e., they are often rated as operation #29.

No examples beyond those given for operation #17 will be given here.

30. Administering a primary or back-up positive reinforcer.

Examples:

a. When Karen (see example 27.a.) loses at least one pound during the week, she and Bert go on a date together as the back-up reinforcer.

Administering the date would be rated "-(30)-", because, of necessity, the date requires the direct participation of both Karen and her husband. Neither of them could singly administer the date. Bert would not go on the date, if Karen had not earned it.

b. Each time the retarded child makes eye contact with the therapeutic aide for at least two seconds, the aide gives the child a sip of juice.

Giving the sip of juice would be rated "-30-".

c. Kent (see example 27.b.) plays tennis as soon after he has accumulated 30 points as possible. He does not play until he has at least that number of points. Tennis is his self-administered back-up reinforcer for studying.

This operation would be scored "-30-". In contrast to example 30.a., Kent is the only person responsible for carrying out the reinforcement contingency. Although playing tennis requires a partner, the partner was not participating in controlling the self-reinforcement contingencies. The partner would play tennis with Kent even if Kent had not fulfilled his committment to himself.

31. Removing a primary or back-up positive reinforcer.

Examples:

a. David is 10 months old. He has developed the habit of throwing food from his plate onto the floor. His mother has just started a new way of handling the problem. Each time he throws food, she immediately removes his plate from his reach for 60 seconds. After one minute passes she returns the plate to his eating area.

Her removing the plate when he throws food would be scored "-31-".

b. In order to accelerate his progress Ron places one cream-filled chocolate in a bowl for each 20 minute interval during which he has had some positive verbal interchange with his wife. If he makes a sarcastic remark, however, he throws one chocolate into the trash. He only throws away chocolates from the supply which he has already earned.

This response-cost procedure would be rated "-31-".

c. Bill wants to control his own treatment program, but he has sought some assistance from a friend. Bill is working on reducing scratching behavior which produces lesions in his skin. For every ten minutes he goes

without scratching he gives himself a check mark on a sheet of paper. For any ten-minute interval in which scratching occurs he marks the paper with the letter "S." At the end of each day he shows his record to his friend. Each day at dinner he and his friend remove one teaspoon of desert from Bill's plate for each "S" appearing on his check sheet.

This jointly administered response cost would be scored "-(31)-".

32. Administering a secondary, social, or token positive reinforcer.

Examples:

a. Jeff and his teacher agree to review his written assingments each day and to evaluate them for neatness and good handwriting. As they review the work, both of them make positive statements about those aspects of the work that were done well.

Making these positive evaluative statements would be rated "-(32)-".

b. Ralph uses his wrist counter to administer himself a point (i.e., a token) for each time he raises his hand to be called on during class discussions. He is working on increasing his oral participation.

This example would be rated "-32-".

c. Each time Joey completes all of his assigned math problems during the study period, his teacher puts a gold star on the work sheet and praises his performance.

The placing of the star and praising Joey would be scored "-32-".

33. Removing a secondary, social, or token positive reinforcer.

Examples:

a. Mike was attempting to quit smoking. He signed an agreement with his best friend, Will, to carry out several procedures. Part of the agreement stated that Mike would keep track of the number of cigarettes smoked each day and the number of hours during which he did not smoke. He gave Will $250 to hold "in escrow." For every eight waking hours

Mike went without smoking, Will gave Mike $5.00 paid from the $250 deposit. For each cigarette smoked Will gave Mike $5.00 which Mike placed in an envelope and addressed it to a political organization which Mike detested. The two of them walked to the nearest mail box and mailed the donation.

This form of response cost for smoking would be rated "-(33)-".

b. Miss Jones, a second-grade teacher, runs her class on a token economy. One element of the system involves a response cost for disruptive talk outs. The entire class accumulates points earned by several categories of "good" behavior. Each talk out costs one point which is subtracted from the class's total. She keeps the points on a large chart at the front of the room.

This teacher-administered response cost would be rated "-33-".

c. Jack is an 11-year-old boy who often says things which his peers do not like. He has reached the point where he understands what he does that gets him into social trouble, but he tends to forget to think before speaking. He decided to apply a time-out procedure to himself. Each time that he says something offensive he excuses himself immediately, goes to a room or area where no other person is present, and stays there with his eyes closed for two minutes. After two minutes he may return to the same person or group he left two minutes earlier.

This self-administered time-out would be rated "-33-".

34. Choosing a primary or back-up negative reinforcer. This operation is the same as #16 except that in the case of #34 the choosing occurs after the treatment program has been in operation for a while. "Choosing" should be distinguished from "administering."

No examples beyond those given for operation #16 will be given here.

35. Choosing a secondary, social, or token negative reinforcer. This operation is the same as #18 except that in the case of #35 the choosing occurs

after the treatment program has been in operation for a while. "Choosing" should be distinguished from "administering."

No examples beyond those given for operation #18 will be given here.

36. Administering a primary or back-up negative reinforcer.

Examples:

a. Jan is a 36-year-old professional woman who complains of disturbing, obsessive thoughts. She wears a large rubber band on her wrist. Each time that the thoughts begin, she snaps her wrist on the tender side with the rubber band.

This self-delivered punishment would be scored "-36-".

b. Ruth is an in-patient on the children's unit of a state hospital. She has a long history of engaging in self-injurious behavior. Under her present treatment program the staff deliver painful, noninjurious electric shocks to Ruth whenever she begins to carry out self-injurious acts.

This use of shock would be rated "-36-".

No example of jointly administered negative reinforcers will be given.

37. Removing a primary or back-up negative reinforcer.

Examples:

a. Stewart is undergoing aversion relief treatment. The therapist turns on the shock device and gradually increases the intensity. When Stewart feels he can tolerate the shock no longer, he says, "Relax!". The therapist immediately turns off the shock.

This arrangement for controlling shock termination would be rated "-(37)-", since both Stewart and his therapist play a clear role in removing the shock.

b. After completing several treatments in the therapist's office, Stewart takes a portable shock device home. He gives himself the aversion relief treatments.

This arrangement would be scored "-37-".

c. During one phase of Ruth's treatment (see example 36.b.) for self-injurious behavior the shock stayed on until all such behavior ceased. When the self-injurious behavior stopped, the staff person in charge of the treatment terminated the shock.

This arrangement would be scored "-37-".

N.B.: In general, when the target behavior itself directly leads to the onset or termination of a reinforcer that is delivered by another person, the operation should be underlined as in example 37.c. When the target subject engages in some of the controlling responses that provide or remove the reinforcer, the operation should be placed in parentheses as in example 37.a.

38. Administering a secondary, social, or token negative reinforcer.

Examples:

a. A mother has learned to give a verbal reprimand each time her son does something which she does not like.

Giving such reprimands would be rated "-38-".

b. As one of the elements in a self-control program for an impulsive seven-year-old boy he reprimands himself for engaging in socially unacceptable, attention-getting behaviors by saying, "Stop goofing off. Such behavior is dumb and will only get me into trouble."

c. In training the child in example 38.b. the therapist made some videotapes of the child in his regular classroom. He and the child viewed each of the tapes and practiced delivering the reprimands by evaluating what they were viewing.

These jointly administered reprimands would be rated "-(38)-".

39. Removing a secondary, social, or token negative reinforcer.

Examples:

a. Jack's sixth-grade teacher stamps his papers with a sad face when his work is not satisfactory. She also writes on the paper what he needs to do to perform satisfactorily, but he is left on his own to carry out the corrections and to evaluate the reworked papers. She has a stack of plain white stickers which Jack can use to cover up an unhappy face when he decides that the piece of work in question is satisfactory.

The covering up (i.e., removal) of the sad faces would be rated "-39-".

b. Mr. Smithers gives "black marks" as part of his classroom token economy. He gives black marks for any one of several disruptive behaviors which are listed on a chart. Engaging in activities which will help another person is the method students have available for having their black marks removed from their records. Mr. Smithers decides when a student has "worked off" a black mark. He tells the student when the criterion is reached and changes his records accordingly.

The operation of removing black marks would be rated "-39-".

c. Carl and Dora are the parents of Tom, a ten-year-old boy. They have concluded that they pay far too much attention to Tom's failures and too little attention to his successes. They are working to change their own reactions to Tom. When they criticize his behavior, they record a minus (-) sign on a sheet of paper. When they attend to his positive behaviors, they record a plus (+) sign. They combine their data for each day and sum across the two response categories. Then they remove one minus sign for every two plus signs recorded. If any minus signs remain on the records for that day, the parents will spend five minutes for each minus sign doing Tom's household chores.

The process of removing their minus signs would be scored "-(39)-", since both of them participate in carrying out the procedure.

Example of a Coded Treatment

The preceding section defined and illustrated each element in the system for describing any psychological intervention in coded form. The present section applies the system to the description of a treatment described in a recent journal article (Fantuzzo, Harrell, & McLeod, 1979). Fantuzzo and his colleagues employed one third-grade student to carry out self-regulation procedures in his classroom. Simultaneously they observed and recorded the behavior of an untreated boy who was a fellow student in the target subject's class.

Direct quotations from the procedures section of the Fantuzzo et al. article appear below along with their coded summary:

"...a male graduate student acted as the child's 'employer,' approaching the target child on the school playground and offering him...a job" (p. 315). Code this information as follows: 8

"...he [the subject] was to observe his [own] behavior" (p. 315). Code this information as follows: 23

"The child was then to record his performance on a wrist counter if it matched the defined behavior" (p. 316). Code this information as follows: 24

"...the child...set his own goal in a contract with the employer..." (p. 316). Code this information as follows: 12 and (14)

"...he was to compare his self-observed performance with the stated goal" (p. 316). Code this information as follows: 26

"The target child delivered an immediate reinforcer to himself, contingent upon a positive comparison between his own performance and his set goal. This reinforcer took the form of a point, which was exchanged for back-up reinforcers, such as toys or special trips, that the child had previously chosen" (p. 316). Code this information as follows:

15 27 and 32

"One behavioral category, 'attentive behavior,' was tracked across both target and generalization subjects for the duration of the study" (p. 316). The information provided in the preceding sentence does not make clear who selected attentive behavior as the target; therefore, coding of this information could not be performed until additional information was obtained from the investigator. This additional information clarified that the investigators had selected the target behavior; therefore, code the amplified information as follows: 9

"Attentive behavior included reading out loud when instructed to do so, looking at pages of appropriate academic material, talking with teacher permission, writing, or visually attending to the teacher during an academic procedure" (p. 316). Although this definition of the target behavior is clear, the article did not make an unambiguous statement as to who defined the behavior. Additional information obtained from the investigators indicated that they had provided the definition; therefore, code the amplified information as follows: 10

In addition to some ambiguities contained in the preceding two quotations, some of the earlier quotations that were coded also raised questions about possible additional operations that were actually performed but not clearly spelled out in the article.

Who provided the target child with the choices surrounding goal setting? The investigators provided the choices; therefore, score this information as follows: 5

Who set the performance standards for consequating the target behavior? The child and his employer jointly worked out those performance standards; therefore, score this information as follows: (13)

Who chose points accumulated on a wrist counter as the method for

administering the "token" reinforcers? The investigators made that selection; therefore, score this information as follows: 17

Who actually administered the back-up reinforcers after the child had accumulated enough points to purchase one? The investigators administered the back-up reinforcers; therefore, score this information as follows: 30

Reordering the preceding coded information is the last step in the coding process. The final description of Fantuzzo et al.'s self-regulation treatment is as follows: 5-8-9-10-12-(13)-(14)-15-17-23-24-26-27-30-32

Among other things this coded description of one self-regulation treatment makes clear than what may appear to be a simple intervention is, in fact, a complex intervention package consisting of 15 operations, six of which were carried out by someone other than the target subject, seven of which were carried out by the target subject himself, and two of which were carried out jointly by the child and another person.

In order to facilitate use of the coding system Table 1 provides a list of the therapeutic operations without their definitions and examples.

Place Table 1 about here

Reliability

The first attempt to determine the inter-rater reliability of the coding system used four persons (three graduate students and the author). All three students had participated in group discussions about the use of the system, but one of them had never used the code prior to the reliability check. One student had previously coded two treatments, and the remaining student had coded more than 20. The author had previously coded several dozen treatments, but had not

written definitions and clinical examples for each therapeutic operation.

The four raters independently coded the three treatment conditions (Baseline, Self-observation, and Self-reinforcement) reported by Clement, Anderson, Arnold, Butman, Fantuzzo, and Mays (1978). Then the codings of pairs of raters were compared in the following way: The data were entered into a bivariate frequency table. In order to be placed in the cell for agreement on occurrence both raters had to use the same modifier as well as the same number. For example, if both raters used the code "-5-," an agreement on occurrence would be entered in the table. If one rater used "-5-," and the other rater did not report any form of "5," a single disagreement was recorded. If one rater used "-5" and the other rater used "-(5)-," two disagreements were recorded. In order to reduce the problem of spuriously inflating the reliability measure with chance agreements, agreements for non-occurrence of an operation were only entered in the table once for each operation. For example, if neither rater used "providing choices," a single agreement was recorded for "-5-" instead of three agreements for the nonoccurrence of "-5-," "-5-," and "-(5)-". A phi coefficient (Roscoe, 1975, pp. 115-116) was calculated for each comparison of paired raters using the data in the bivariate frequency table. A test of the significance of each phi coefficient was run using the formula chi square = $N\ (phi)^2$. Probability levels were determined for chi square with one degree of freedom.

Twelve such comparisons were performed. The obtained phi coefficients ranged from 0.17 to 0.63 with a median of 0.32. The corresponding chi square ranged from 1.36 to 15.48 with a median of 4.44 and the significance levels from $P < 0.30$ to $P < 0.001$ with a median of $P < 0.05$.

Following the computation of the preceding inter-rater reliability, the coding system was revised by providing the definitions and clinical examples of

the 39 therapeutic operations as described in the earlier part of the present paper. Three graduate students and the author used the revised system to code the Baseline, Self-instructional Training, Self-monitoring, and Self-reinforcement conditions described by Varni and Henker (1979).

Twelve new comparisons were performed. The obtained *phi* coefficients ranged from 0.32 to 0.75 with a median of 0.64. The corresponding chi squares ranged from 4.20 to 21.94 with a median of 15.97 and the significance levels from $P < 0.05$ to $P < 0.001$.

The provision of printed definitions and examples seemed to have improved inter-rater agreement substantially.

One check on intra-rater agreement was also conducted. The author coded the Self-reinforcement treatment of Fantuzzo, Harrell, and McLeod (1979) on two occasions separated by 15 days. He achieved perfect agreement between the two codings (*phi* = 1.00, chi square = 39.00, $P < 0.001$).

Discussion

The present coding system provides a method for performing formal analyses of therapeutic interventions. It is compatible with earlier attempts to engage in formal analysis of basic paradigms of learning (e.g., Tryon, 1976; Woods, 1974), but neither of these writers included setting events or primary behaviors in his conceptual scheme. Both also failed to attend to the diversity of antecedent stimuli, including social models and their potentially differential effects on behavior. Their analyses also ignored the issue of self-, other-, and jointly-administered controlling responses.

The primary similarity between the present paper and the articles by Tryon and Woods is that all three propose systems which are based on experimental/therapeutic operations rather than compatibility with a particular theory. Tryon

articulated the present bias well in the opening paragraph of his article:

> The role of formal analysis in psychology appears disproportionately small. By formal analysis, I refer to the analysis of the logical form data take rather than an analysis of data content or the relationship of the data to hypothetical constructs.

All three papers also emphasize the value of having a taxonomy of operations which can be related to the behavioral outcomes produced by the possible combinations of those operations.

None of these systems is complete, however, and the present system has several problems which need attention. First, the coding system is probably not exhaustive in including all possible generic operations. Second, the definitions and examples require further refinement so that higher levels of inter-rater agreement can be achieved. Third, although the system was designed for use by any psychologist regardless of theoretical orientation, it has not been field tested by persons outside my own research group. Some of the present terminology may not be sufficiently generic to maximize wide use of the system. Fourth, although using a numeric code is highly concise, the use of numbers rather than prose will be unappearing to some potential users. Fifth, the system does not include a description of schedules of reinforcement and punishment; however, the user can create schedules by chaining coded treatments according to their temporal sequence. Sixth, in general, the present form of the coding system does not adequately describe the interaction between <u>time</u> and the application of a given operation. For example, the system does not identify the latency between the occurrence of the target behavior and the application of the consequence.

In spite of these deficiencies the present coding system does facilitate a more clear and systematic method for describing treatment packages. Such a system should help reduce the confusion which comes from different writers using the same treatment labels to identify different combinations of treatment operations and different treatment labels to identify the same combination of treatment operations. I hope that many persons will field test the system and provide suggestions for improving its usefulness.

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Table 1

List of the Therapeutic Operations Which

Constitute the Coding System

Setting Events

1. Administration of a deprivation schedule
2. Administration of a satiation schedule
3. Administration of drugs
4. Application of physical restraints
5. Providing choices
6. Application of pleasant stimulation
7. Application of aversive stimulation
8. Offering employment; providing a "rooting section;" providing a caring person

Cues, Discriminative Stimuli, & Prods

9. Choosing a target behavior
10. Defining a target behavior
11. Presenting an immediate cue, prod, or discriminative stimulus
12. Setting a goal for a target behavior
13. Setting performance standards for consequating the target
14. Writing a performance contract
15. Choosing a primary or back-up positive reinforcer
16. Choosing a primary or back-up negative reinforcer
17. Choosing a secondary, social, or token positive reinforcer
18. Choosing a secondary, social, or token negative reinforcer
19. Providing a model

Primary Behaviors

20. Engaging in a desired behavior
21. Engaging in a response which competes with an undesired behavior
22. Withholding/suppressing a behavior

Consequences, Changes in the Environment Produced by the Target Behavior, Tracking, & Feedback

23. Observing a target behavior; providing feedback; observing behavioral byproducts
24. Recording a target behavior; recording behavioral byproducts
25. Graphing a target behavior
26. Comparing performance with a goal, objective, or criterion
27. Comparing performance with the standards for consequating the target
28. Choosing a primary or back-up positive reinforcer
29. Choosing a secondary, social, or token positive reinforcer
30. Administering a primary or back-up positive reinforcer
31. Removing a primary or back-up positive reinforcer
32. Administering a secondary, social, or token positive reinforcer
33. Removing a secondary, social, or token positive reinforcer
34. Choosing a primary or back-up negative reinforcer
35. Choosing a secondary, social, or token negative reinforcer
36. Administering a primary or back-up negative reinforcer
37. Removing a primary or back-up negative reinforcer
38. Administering a secondary, social, or token negative reinforcer
39. Removing a secondary, social, or token negative reinforcer